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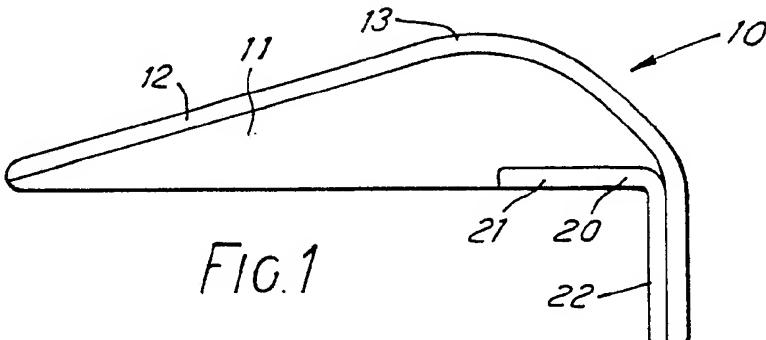
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E1J

## (54) Door protector

(57) A protection member 10 for the edge of a door is substantially L-shaped, with a long arm which has a thick central region 13, having a soft core 11 with a hard covering layer 12 and is secured to the door by an angle section 20. Alternatively the member has a hollow space (40, Fig. 4 not shown) with a number of internal fingers (41) to absorb impacts. Where two members are provided along adjacent edges at an end face of a door (30, Fig. 3 not shown), a seal (31) may be provided between them; the seal may be intumescent.



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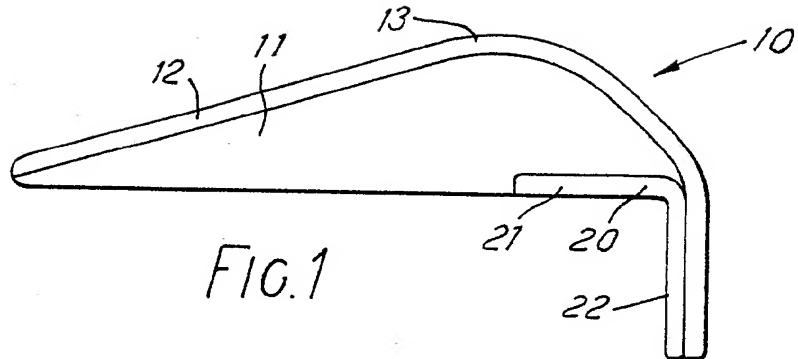


FIG. 1

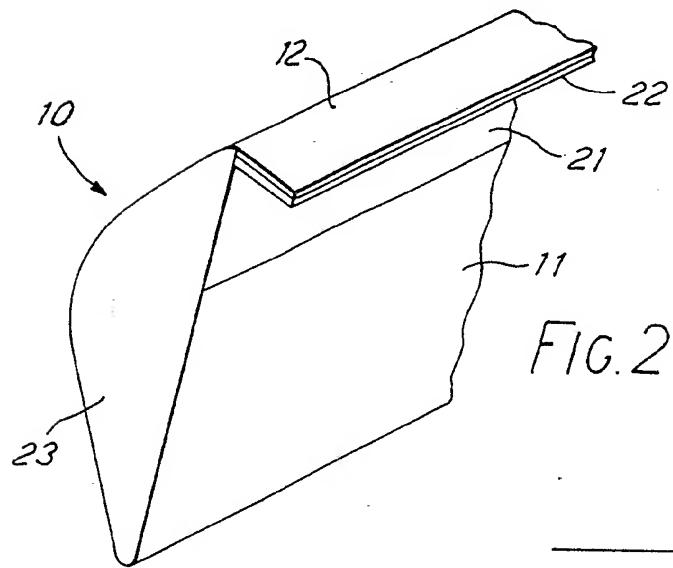


FIG. 2

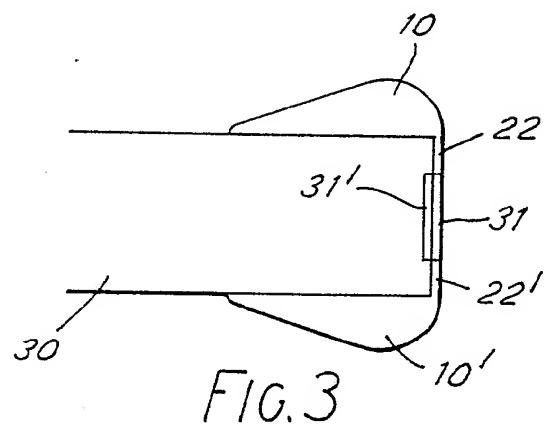


FIG. 3

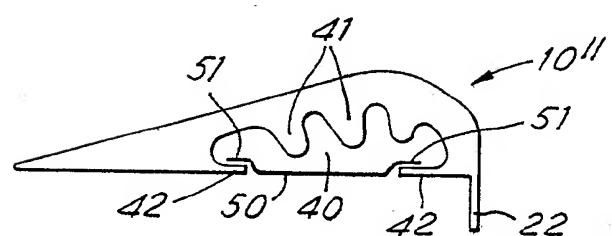


FIG. 4

## SPECIFICATION

### Improvements relating to doors

5 The present invention concerns improvements relating to doors and more particularly to means for protecting from damage the leading or free vertical edge of a door.

There have been proposed bumper or cushion members for attachment to the central regions of the faces of doors as protection against impacts. However, for heavy duty applications, such as hospital doors which are frequently struck by mobile beds carrying patients and trolleys carrying essential equipment, it has been found that damage to other parts of the door can still occur.

The present invention seeks to overcome or at least reduce the above problem.

20 According to the present invention there is provided an elongate door-protection member of generally L-shaped uniform cross-section with a short arm and a long arm substantially perpendicular thereto, wherein the short arm is of substantially uniform thickness and the long arm has a thick intermediate region and thinner end regions, the outer contour of the longer arm being at least partly curvilinear. The thickest region of the long arm is preferably displaced from the central point of the long arm towards the short arm so that the contour portion between the thickest region and the short arm is steeper than that between the thickest portion and the free end of 35 the long arm. At least a substantial part of the latter contour portion may be rectilinear.

The invention also includes a door of which one or both corners of the free vertical edge is/are provided with a door-protection member 40 as set forth above.

Preferred embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, of which:

45 Fig. 1 is a cross-sectional view of a door-protection member in accordance with a first embodiment of the present invention;

Fig. 2 is a perspective view of an end region of the member of Fig. 1;

50 Fig. 3 is a cross-sectional view of a door, the leading edge of which is provided with two door-protection members; and

Fig. 4 is a cross-sectional view of a door-protection member in accordance with a second embodiment of the present invention.

Referring to the drawings, an elongate door-protection member 10 comprises a central part 11 of a relatively soft wood covered by a relatively hard protecting layer of plastics material 12. A thick central region of the member forms a bulbous projection 13 which is curved relatively steeply to the right and is inclined relatively gently to the left in Fig. 1.

Inset in part 11 is one arm 21 of an angle section 20 of metal, e.g. aluminium, which is

fixed to part 11 by means of screws (not shown). The other arm 22 of the angle section is covered by the layer 12. Thus arm 22 and part 11 form short and long arms respectively of a generally L-shape.

The door-protection member 10 is arranged to be attached along part of or the whole of a vertical corner of the leading or free edge of a door (see e.g. Fig. 3). The preferred method

75 of attachment is by means of a so-called "knock-off" device. One such device comprises two inter-fitting channel members. The arms of the broader, female, channel are bent slightly inwardly and the arms of the nar-

80 rower, male, channel are bent slightly outwardly. In addition the web portions of both channels taper along their length so that when the male channel is inverted relatively to the female channel it can readily slide therealong.

85 The web portion of one of the channel members is secured to the door and the web portion of the other channel member is secured to the door-protection member (both with the wide end of the web uppermost). Accordingly

90 the door protection member can be readily attached to and detached from the door. The attachment of the channel member to the door-protection member 10 is preferably by means of a screw passing through arm 21 of section 20.

One or both ends of member 10 are covered by a layer 23 of the same material as cover 12.

Fig. 3, illustrates a plan view of two door-protection members 10, 10' attached to the corners at the leading edge of a door 30. A space is left at the centre of the leading face between the two arms 22, 22' for the attachment of a seal 31 which may be of the fire stop and/or smoke stop (intumescent) type. A recess may be provided underneath the central space for holding a seal 31'.

An advantage of the above-described door-protection member is that it acts as a cushion or bumper to protect the leading edge of a door from damage. Should damage to the door-protection member occur (e.g. due to a particularly severe impact or repeated impacts) then it is readily replaced in view of its easy

110 detachment from the door. The door-protection member is much cheaper than a door, so that this operation is much less expensive in terms of material and labour than repairing or replacing an entire door. The relatively soft 115 centre part 11 serves to absorb a large fraction of any impact energy whereas the relatively hard cover 12 serves to protect member 10 from damage and to preserve a smart appearance.

120 125 The relatively small thickness of arm 22 enables the protection member to be incorporated in existing door sets with little alteration being required to the adjustment of the door. The provision of a central space for seal 31

130 has the advantage that the seal is to a certain

extent protected from impact damage by the arm 22. The above-described embodiment may be modified in several ways. For example the material of the centre part may be of a 5 resilient or softplastics material instead of soft wood. Alternatively or in addition cover 12 and/or 23 may be of a different hard material e.g. a hard wood or a metal. Angle section 20 may also be replaced by a suitable plastics 10 extrusion.

A door-protection member 10 may be provided along only one corner of the door if required, and the members 10 and/or 10' may extend over part or all of the height of the 15 door.

Although separate members 10, 10' have been described covering respective corners, arms 22, 22' may be combined to provide a single generally U-shaped member which 20 covers the entire end face and adjacent parts of the adjoining major door faces.

Instead of the releasable attachment arrangement described, the door-protection member may be more permanently attached 25 to the door if desired, e.g. by screwing.

The door protection member(s) may be used for single door or double door sets.

In a second embodiment of the present invention, Fig 4, a door-protection member 10" 30 comprises a single extrusion of resilient plastics material. The exterior shape of member 10" is generally the same as that of member 10 in Figs 1 to 3. However, the interior of member 10" is formed with an open space 35 40. The interior surface is formed with a plurality of fingers or projections 41 which, together with the resilience of the extruded material, serve to absorb impacts and protect the door from damage. At the sides of space 40, 40 member 10" is formed with edge projections 42.

To attach member 10" to a door, there is provided an elongate plate 50 of e.g. metal or hard plastics material. Plate 50 is attached to 45 the door, e.g. by screwing. At each side, plate 50 has a portion raised from the adjacent surface of a door to form a flange 51.

To attach member 10" to plate 50, and thus to the door, edges 42 are simply 50 snapped-in to engage behind flanges 51 as shown in Fig.4. Although a slightly more difficult operation, member 10" can be detached (e.g. in case of damage thereto) by reversing this process.

An advantage of the embodiment of Fig.4 is that not only does it resist impacts which are substantially perpendicular to the door, but it also is not dislodged by impacts parallel to or at a small acute angle to the door. These 55 latter impacts simply cause the respective edge 42 to become more firmly engaged with the respective flange 51. The embodiment of Fig.4 may be modified along the same lines of the embodiment of Figs 1 to 3 and vice 60 versa.

## CLAIMS

1. An elongate door—protection member of generally L-shaped uniform cross-section with a short arm and a long arm substantially perpendicular thereto, wherein the short arm is of substantially uniform thickness and the long arm has a thick intermediate region and thinner end regions, the outer contour of the longer arm being at least partly curvilinear.
2. A member according to claim 1, wherein the thickest region of the long arm is preferably displaced from the central point of the long arm towards the short arm so that the contour portion between the thickest region and the short arm is steeper than that between the thickest portion and the free end of the long arm.
3. A member according to claim 2, wherein a substantial part of the contour portion between the thickest portion and the free end of the long arm is rectilinear.
4. A member according to any preceding claim comprising a central part of relatively soft material and a covering layer of relatively hard material.
5. A member according to claim 4 wherein an angle section member is inset in the central part.
6. A member according to any preceding claim, wherein a first channel member tapering along its length is attached thereto for engagement with a correspondingly tapering second channel member which is arranged to be attached to a door.
7. A member according to claims 5 and 6 wherein the first channel member is attached to the angle section member.
8. A member according to any of claims 1 to 3, which is of resilient material and wherein the long arm has a cross-section comprising an open space into which project a plurality of fingers.
9. A member according to claim 8, wherein the open space has edge flanges which are arranged to engage behind the raised edges of an elongate securing plate which is arranged to be attached to a door.
10. An elongate door-portion member substantially as herein described with reference to Figs 1 and 2, Fig.3 or Fig.4 of the accompanying drawings.
11. A door having a member according to any preceding claim extending along a vertical edge thereof.
12. A door according to any of claims 1 to 10 having members according to any preceding claim extending along adjacent vertical edges thereof.
13. A door according to claim 12 wherein a gap remains between the two members at the end face of the door, a seal being provided in said gap.
14. A door according to claim 13, wherein 130 said seal is intumescent.

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